

CLAIMS

What is claimed is:

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1. A method of printing an electronic component comprising:
providing a surface;
providing a redox couple comprising an oxidizer and a reducer;
solubilizing at least one of the oxidizer and reducer in a first solution;
applying the first solution to the surface to create a first layer;
initiating a redox reaction in the first layer; and
completing the component by adding at least one additional layer.
 2. The method of claim 1 wherein the component comprises is an active component.
 3. The method of claim 1 wherein the component comprises an integrated component.
 4. The method of claim 1 wherein the component comprises a power source.
 5. The method of claim 1 wherein the component comprises a battery.
 6. The method of claim 1 wherein at least one of the oxidizer and reducer comprises a metal containing compound, the metal selected from the list consisting of copper, iron, cobalt, tin, gold, silver, palladium, platinum, nickel, lithium, aluminum, and titanium.
 7. The method of claim 1 wherein the oxidizer is a strong oxidizer and the reducer is a strong reducer.
 8. The method of claim 1 wherein the redox couple includes a material selected from the list consisting of formate, nitrate, alkoxide nitrate, alkoxide perchlorate, acetate nitrate, acrylate nitrate.
 9. The method of claim 1 wherein the step of applying comprises depositing the first solution using at least one of a stamp, a rotating plate, and a jet.
 10. The method of claim 1 wherein at least one of the layers comprises an electrolyte.

11. The method of claim 1 wherein the redox reaction results in the first layer consisting essentially of a pure metal.
12. The method of claim 1 wherein the redox reaction results in the first layer consisting essentially of a mixed metal oxide.
13. The method of claim 1 wherein the step of initiating the redox reaction comprising radiating the applied solution with microwave radiation.
14. The method of claim 1 wherein the step of completing the component comprises: providing a second redox couple comprising a second oxidizer and a second reducer; solubilizing at least one of the second oxidizer and second reducer in a second solution; depositing the second solution onto the first layer, and initiating a redox reaction in the second solution.
15. The method of claim 1 wherein the component comprises a battery, and the step of applying comprises depositing the first solution using at least one of a stamp, a rotating plate, and a jet.
16. The method of claim 1 further comprising: providing a second redox couple comprising a second oxidizer and a second reducer; solubilizing at least one of the second oxidizer and second reducer in a second solution; depositing successive deposits of the second solution, and initiating a redox reaction in the successive deposits to produce a solid conductor that electrically couples at least two the layers of the component that are mutually non-adjacent.
17. The method of any of claims 1 -16 wherein the first solution applied to the surface contains no more than 5% particulates by weight.
18. The method of any of claims 1 -16 wherein the first solution applied to the surface contains no more than 2% particulates by weight.

19. A method of printing an electronic circuit comprising:
printing a plurality of components according to one of the methods of claims 1 - 16;
and
applying the first solution to the surface in a pattern that connects at least two of the
plurality of components, and initiating a redox reaction in the pattern to
produce a conductive trace between the at least two components.
20. The method of claim 19 wherein the pattern has a lateral resolution below 10 μm .
21. The method of claim 19 wherein the circuit includes a transistor, a power source,
and a capacitor.